**Grade 12 biology foundation curriculum standard 9: Understand physiological regulatory systems of mammals**

Breakdown of standards:

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| standard | objectives | Assessment | |
| 9.1 Explain the importance to the survival of organisms of being able to respond to environmental stimuli | Provide a clear explanation of this behavior and its importance | MCQ (knowledge) | Give an example (comprehension) |
| *e.g video showing range of ways in which animals detect potential dangers*  Demonstrations:   * germination in broad beans * etiolation in mustard/watermelon seeds (p344) * state there is a hormonal basis(no details), advantages of response   (Advanced 10.1) (p 344)   * negative geotaxis& phototaxis in snails * …. | **Learning intentions:**   * That **living things** **respond** to a range of **stimuli** * Stimuli may be both **biotic** and **abiotic** * That **plants** respond to (e.g.) temperature, light intensity, consumers, competitors (in specific ways), with examples. * That **animals** respond to predators, prey, other members of the same species, (in specific ways), with examples. * ….   (Keywords) | | |

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| standard | objectives | Assessment | |
| 9.2 Explain the importance of homeostasis in mammals and describe the process in terms of receptors, effectors and negative feedback | Explain the importance | MCQ (knowledge) | Explain the importance (comprehension) |
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| 2 x Give an example (comprehension) |
| *eg Construct charts to compare mammalian feedback mechanisms with mechanical and electrical regulatory systems* (Ch 18)  Demonstration:   * The toilet cistern * Water bath – either manual control of temperature, or using a thermostat (p 310) | **Learning intentions:**   * That **homeostasis** refers to the maintenance of a constant internal environment * That mammals are **homeotherms** * That **examples** of factors being controlled include: temperature, tonicity, glucose levels, dissolved gases * That a toilet cistern is a **mechanical example** of a **feedback mechanism** * That **receptors** detect stimuli * That **effectors** bring about a response * … | | |
| Describe the process | Describe the process (application) | |
| **Learning intentions:**   * That a feedback mechanism consists of receptors and effectors, a control centre and a feedback loop. * That the control of blood sugar levels involves the following components… * … | | |

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| standard | objectives | Assessment | | |
| 9.3 Describe thermoregulation in humans and the roles of TRH and TSH | Describe thermoregulation | Label (knowledge) | 2 x MCQ (knowledge) | Describe thermoregulation (comprehension) |
| *eg Watch and discuss a video about human survival in hot and cold conditions. Write a play about survival in hot and cold conditions.* | Learning intentions: |  |  |  |
| Describe the role of TRH & TSH | Describe role of both TRH & TSH (application) | | |
| Learning intentions: |  | | |

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| 9.4 Describe the mammalian oestrous cycle and the roles of oestrogen, progesterone, LH and FSH | Describe the oestrous cycle | Describe the oestrous cycle in its entirety (application) |
| *eg Study and interpret data on the hormone levels in the blood system of women over a monthly cycle and when pregnant.*  *Use the library and the Internet to find out about the hormonal action of female contraceptive pills.* | Learning intentions: |  |
| Explain the roles of oestrogen, progesterone, LH and FSH | What are the roles of each (comprehension) |
| Learning intentions: |  |

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| standard | objectives | Assessment |
| 9.5 Describe the similarities and differences between nervous and hormonal control systems in mammals. | Describe similarities & differences | Compare the systems (analysis) |
| *eg Give groups of students a set of cards that state the properties of the hormonal and nervous systems. Ask them to sort the cards into sets of properties that are unique to each system and properties that are common to both systems*. | Learning intentions: |  |